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OF
HARMONY

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To

WILLEM A. VALKENIER

a harmonious man and musician

PREFACE

It may seem presumptuous to add one more textbook on harmony to the numerous existing ones. But each writer is convinced of a special need that he wants to meet; otherwise the subject might justly have been considered exhausted two centuries ago, upon the publication of the original and fundamental treatises by Rameau and C. P. E. Bach.

The teaching of harmony has become heavy with peculiarities absorbed into it in the course of the last generations. While the teaching of strict counterpoint, in contrast, has remained relatively clear and undiluted—protected, as it were, by adherence to basic and firm principles—the fundamentals of harmony have been gradually covered up by individual interpretative rules which are apt to confuse and overwhelm the average student. Thus many schools stretch the teaching of harmony over four semesters, whereas it can easily be completed in four months. The exaggerated extension of the course produces various classifications of harmony, such as distinctions between diatonic and chromatic harmony, or traditional and modern harmony. These distinctions may be useful in relation to a specific composition, but they are meaningless as interpretations of the fundamental laws of harmony.

The theory of harmony must be sharply distinguished from the practice of harmony. The former deals with principles and norms; the latter, with actual compositions. Most of the laws in the theory of harmony can be deduced from the natural phenomenon of the overtone series. An octave is always more consonant than a fifth, regardless of the period in which

a musical composition is written, and a fifth more consonant than a fourth. Other laws are conditioned by practical or pedagogic demands. The human voice organizes progressions according to the ease with which they are singable. The natural laws reveal a basic truth; and the conditioned laws, characteristic of music of Western civilization, remain valid in a theory concentrating on this specific civilization.

The practice of harmony, on the other hand, is an audible manifestation of harmonic laws. The natural laws bind the master and the pupil alike, but the conditioned laws (quasi practical and pedagogic conventions) are rightly tested by the master's imagination. A composition may openly adhere to the theoretic norm, or it may deviate from it for purposes of expression. Preparation of a dissonance, for instance, is required by the law resulting from the interplay of the two vector forces of harmonic consonance and singable melody. An unprepared dissonance, like that in the first chord of Beethoven's First Symphony, does not testify against either the law or Beethoven: it indicates a deviation from the norm for expressive reasons. The unprepared dissonance produces a shock which cannot easily be explained except as caused by a violation of a generally valid principle.

The theory of harmony is an abstraction. It makes possible a classification of chords, and it clarifies certain norms concerning the movement from chord to chord. Strict counterpoint, another branch of music theory, is also an abstraction, though of a different kind. Whereas the causes of harmonic abstraction are theoretic, those of contrapuntal abstraction are technical and pedagogic. One seldom composes in species, for instance, but the knowledge of species provides the structure over which a composer may put a façade to his taste. Thus strict counterpoint is not identical, as has often been stated, with Palestrina style, which is only one kind of façade concealing relatively little of the structural outline. Strict counterpoint is not identical with any style. In terms of har-

mony, similarly, nobody is expected to compose in simple chords. Rhythmical complications, melodic embellishments, and variations of timbre make up the façade of a composition. To the façade, also, belong style distinctions like those mentioned before: diatonic or chromatic, traditional or modern characteristics. But below the surface the movement of the music is propelled by forces which can be isolated and made the object of critical investigation and technical practice. Harmony is one of these forces. This process of separation inevitably leads from specific examples to generally valid abstractions. While the final goal of a musical education should be the synthesis of all forces that constitute a composition, good reasons justify the temporary singling out of these forces in teaching—not to mention the fact that this kind of abstraction is also philosophically in order.

Hence this book will pay little attention to musical elements outside harmony. No demands will be made to render the assignments more “interesting” by varied rhythms, melodic embellishments, or an expressive soprano melody. What may appear as a neglectful omission is in fact a deliberate relegation to counterpoint of elements that belong there. Stated positively, the purpose of this book is to classify existing chords and to teach how to connect them with each other. Concentration on these two tasks will lead the student to the solution of two practical, purely harmonic, problems. He will be able to make a harmonic analysis of a composition by reducing various sound combinations to simple harmonic functions; and he will be able to realize a figured bass. In the wake of the latter enterprise he will also have learned how to realize the inherent harmony of any melody—not in nineteenth-century (or any other) style, but in terms of possible chord connections.

The theory of harmony is not necessarily the first course in a music curriculum. A certain knowledge of the rudiments of music—which will not be specifically explained in the text—is

essential to the intelligibility of the book. It is suggested that the student, besides being able to read music in treble and bass clefs, be thoroughly familiar with the following concepts: overtone series, intervals, consonance and dissonance, tonality, keys, signatures, scales, and simple melodic devices properly belonging to the theory of counterpoint (direct, oblique, and contrary motions; suspension, *appoggiatura*, ornaments, etc.). As a quick help, a glossary of these and other prerequisite terms can be found at the end of the book.

The harmonic symbols employed throughout this book follow in principle, though not in all particulars, the system developed by Hugo Riemann.

Because this is meant to be a practical book, purely theoretical speculations and polemics are avoided as much as possible. They are in order where the thinking student (and occasionally also the glib student) may be expected to raise a question. The text will best serve as a guide to a teacher who can supplement the contents by recourse to his own experience; as a primer to an independent student who, aided by intelligence and desire, wishes to familiarize himself with the discipline; and as a refresher to that type of amateur musician who, by saying, "I knew harmony once but I have forgotten most of it," confesses that he has never really understood the basic principles. The text itself will be found to be far less abstract than its professed characterization of the theory of harmony. Experience with teaching harmony in the manner outlined in this book has shown that the average student can easily cover the ground in half a year or less. The only condition for a successful completion of the course is the student's recognition of the fact that the writing of all required assignments, and more, is absolutely necessary. There are no short cuts to the learning of a craft. No pianist will be expected to perform well without diligent practice, and no student will know harmony well without diligent and prolific writing of exercises. The harmony student has one advantage over the

pianist: after a relatively short time of close application and concentration, he will know his field once for all.

Publication of this book gives me the welcome occasion for expressing my gratitude to Louis Dodge, who first encouraged my harmonic thinking; Josef Mertin, who taught me harmony; Howard Talley and Guy Marco, whose friendly, patient consideration helped correct various shortcomings of the manuscript; and, beyond all others, Hugo Kauder, whose keen musical insight and deep wisdom have assisted me in establishing musical standards. Robert Wadsworth proved both his friendship and his stylistic discernment by helping to prepare the manuscript for the printer.

SIEGMUND LEVARIE

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I

General Premises

1

CHORD STRUCTURE

The simultaneous sound of three or more tones is called a *chord* or *harmony*. Chord structure becomes intelligible by reference to the natural phenomenon of the overtone series. The law states that each tone is a composite of a definite arrangement of partial tones:

1.



The first independent harmonic unit formed by the partial tones—in ascending order and graded loudness in relation to the fundamental tone—is called a *triad*. It consists, reduced to the frame of an octave, of two thirds built onto a foundation, which is called the *root*, and spanning the interval of a perfect fifth:

2.



The triad is heard and recognized as a unit. Western civilization has organized the procedure of building other chords analogously by putting on a root a superstructure of thirds.

The theory of harmony teaches how to construct the various existing chords and how to connect them with each other in a logical and functional movement. The abstract theory of harmony is balanced by the concrete setting of chords for four voices or parts. These parts, whether sung or played, are called (in descending order) *soprano*, *alto*, *tenor*, and *bass*. The combination of the theory of harmony with its practical expression in a four-part setting—actually a combination of harmony with counterpoint—is merely a convention, but one that has proved pedagogically convenient for the last four centuries.

Because the triad has three tones which have to be distributed among four voices, one tone must be doubled. The following general rules are applicable throughout:

RULES

1. Distribute the tones within a chord in such a way that the distance between any two adjacent voices will not exceed one octave, except for the distance between the two lowest voices, which may be larger.
2. Double the root whenever possible.
3. Double the fifth as a second choice.
4. Avoid doubling the third in the major triad.
5. Feel free to omit the fifth of any chord, tripling the root.

DISCUSSION

Present-day usage makes little distinction between the terms *chord* and *harmony*. The result is that it is possible to speak—paradoxically, in view of the original meaning—of a “dissonant harmony.”

The principle of building chords in thirds is too strongly influenced by the triad formation of the first six partial tones to be called arbitrary. Arrangement of tones by ascending seconds is identical with the scale. Building in fourths has

been suggested by Schönberg,¹ but the dissonant nature of the fourth makes this solution speculative, rather than acoustically convincing. Even the most sophisticated ear remains sensitive to the distinction between natural and artificial formations. A superstructure of larger intervals, finally, can always be reduced to one of smaller intervals, such as seconds and thirds.

The convention of writing chords in four parts follows the distribution of human voices, female and male, both high and low.

The natural law of the overtone series again is responsible for the rules governing the distribution of tones within a chord. The greatest gap occurs at the bottom, and the distance between any two neighboring tones decreases with rising pitch. A distance greater than an octave between soprano and alto, for instance, would break the cohesion of the chord and seriously interfere with our hearing it as a unified phenomenon, while the same span between the two lowest voices satisfies the acoustical law which recognizes, and the human ear which immediately perceives, the sum of all partial tones as a unit.

The rules concerning the doubling of certain notes are also derived from the physical phenomenon of the overtone series. Among the first six partial tones, the root appears three times; the fifth, twice; and the major third, once. The principle of doubling corresponds to this natural fact. A doubled fifth or third claims more attention than is its natural due. Any occurring deviations are melodically founded. A chord gains equilibrium the more closely it follows the physically (and spiritually) given distribution.

Another explanation proceeds from the fact that the doubling of a tone will make it sound louder along with all its overtones. Hence, the root should preferably be doubled because

¹ *Harmonielehre* (Vienna, 1911), pp. 478-92.

its strongest (i.e., first six) partial tones are identical with those of the triad.

3.



The loudest partial tones of the fifth are somewhat dissonant to the triad tones, but remain within the same key.

4.



Doubling of the major third is not advisable because the first six overtones of the third are badly dissonant to the triad tones; they also introduce a note foreign to the basic key and hence a disturbing feeling of muddled tonality.

5.



The omission of the fifth does not change the character of a chord: the fifth is strongly represented in the overtone series of the root, and the nature of the chord is adequately determined by the third.

ASSIGNMENT

Read the first part of the chapter, "Harmony and Melody," (pp. 69-80, end of first paragraph) in John Redfield's *Music: A Science and an Art* (new ed.; New York, 1935). A knowledge of basic acoustical principles is necessary for a study of music. The suggested pages convey essential facts in concise terms. Other textbooks on acoustics may be consulted.

2

CHORD PROGRESSION

Music is movement. Harmonies are carriers of musical movement by creating tensions and providing resolutions. A harmony must be understood not merely as an isolated static event but as a dynamic function which clarifies drives of energy as well as points of rest. What happens “between chords” is the essential contribution of harmony to the course of a composition.¹ In this light alone, the rules concerning the movement from chord to chord—introduction and resolution—make sense.

RULES

1. Move from one chord to the next by finding the shortest possible way for each voice:

a) Tie over in the same voice any tones common to both chords.

b) Avoid skips larger than a fifth, except for the ascending minor sixth and any octave jumps; and avoid all diminished and augmented intervals.

2. Avoid parallel unisons, octaves, and fifths by preferring contrary motion between the outer voices.

DISCUSSION

With reference to musical movement, consonance can be defined as a *point of rest* and dissonance as a *point of tension*.

¹ See Ernst Kurth, *Romantische Harmonik und ihre Krise in Wagners Tristan* (Berlin, 1920).

The following chord taken by itself is a consonance because it conforms to the natural partial-tone distribution, which is at rest:

6.



The note foreign to the partial-tone distribution introduced in this chord produces tension and stamps the chord as dissonant:

7.



In the following progression, however, we must distinguish between two facets of consonance and dissonance:

8.



Taken as separate units, each of the three chords is a consonance. Heard in a progressive movement, the middle chord will create a strong tension calling for resolution, and must therefore be understood as a dissonance in relation to the whole.

Reference to vocal music gives the reasons for permitting some skips and forbidding others, because they are not easily singable.

On the whole, voice leading in a harmony problem is determined by the given chord progression. Independence of the participating voices is preserved by the rules dealing with parallel movement between two or more voices. Parallel unisons, octaves, or fifths would reduce a four-part setting fundamentally to a three-part setting because one of the two voices concerned would become completely identified with the other. Octave and fifth are the strongest overtones; they are easily audible above a root and therefore are heard to accompany every tone progression.

9.



The rule demanding contrary motion between the outer voices, and certainly avoidance of movement of all four parts in one direction, should be observed not as a dogma but as a suggestion for the safe handling of threatening parallel progressions. Direct motion of all voices is in order, however, if used for shifting the same chord to a different position.

10.



11.



ASSIGNMENT

Read the article on "Harmony, System of" in the *Encyclopaedic Dictionary of Music* by Hugo Riemann, trans. J. S. Shedlock (rev. ed.; Philadelphia and London, 1908). The glossary at the end of this book may prove helpful.

II

The Major Mode

3

TONIC, SUBDOMINANT, AND DOMINANT

If we build triads on the various steps of the major scale, three of the triads will distinguish themselves by the fact that they follow the natural partial-tone distribution. They are major triads, i.e., they consist of a major third and—counting always from the bass up—a perfect fifth. These triads are located on the first (I), fourth (IV), and fifth (V) degrees of the scale.

12.

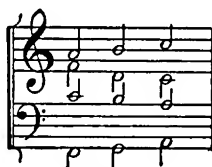


The triad on I is called the *tonic* (T); on IV, the *subdominant* (S); and on V, the *dominant* (D). Our task is to move from any one of these triads to another.

RULES

1. Remember the general rules given in the preceding chapter.
2. Double the major third only if there is really no other solution possible and then only if the two voices doubling the third are led through it in contrary motion.

13.

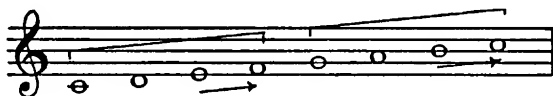


3. When harmonizing a given soprano, write first the entire bass line.

DISCUSSION

The chords that most unambiguously characterize a given tonality are T, S, and D. They contain all the tones of the scale and can therefore express the inherent harmony of any melody. Every harmonic function can be reduced fundamentally to either the tonic, subdominant, or dominant. The inherent harmony of a melody can be more widely reinterpreted by the use of relative chords, secondary chords, and other devices which will be discussed in the course of this book. Finally, the inherent harmony can be resolved into melodic parts by real polyphony. In all cases, however, T, S, and D remain the primary harmonic functions within a key. T is the function of greatest rest. S and D are functions of tension of which D is the stronger because of the ascending tendency of the major scale and the position of the leading tone.

14.



S, the fourth, is weaker, moreover, because it does not occur in the overtone series.

The progression S-T is called a *subdominant*, or *plagal cadence*:

15.



The progression D-T is called a *dominant*, or *authentic, cadence*:

16.



The progression T-S-D-T is called a *full*, or *complete, cadence*:

17.



The progression T-D or T-S-D is called a *half cadence*:

18.



The progression D-S occurs very seldom, primarily because the natural movement of the three major triads, bound by the ascending construction of the scale, is T-S-D-T:

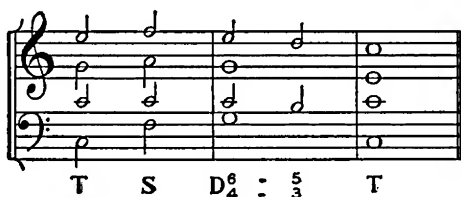
19.



In the progression D-T, the leading tone should normally ascend.

In the practice of the last several centuries, composers have frequently strengthened the dominant cadence by leading into the dominant chord with a double appoggiatura:

20.



The appoggiatura, in recognition of its accented quality, is usually placed on the strong beat of the measure. The insertion does not form a separate chord. The double suspension over a dominant bass which does not move merely emphasizes the dominant chord.

In D₄⁶ always double the bass, which is really the root of the dominant chord.

The following cadence was frequently used in the sixteenth century:

21.



Here, the fourth and the sixth appear as neighboring notes above the dominant. A similar movement can occur above the tonic:

22.



Palestrina endings, for instance, are mostly artful unfoldings of this cadence.

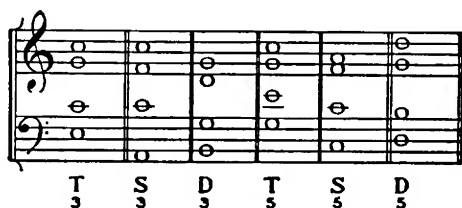
ASSIGNMENT

Harmonize the complete cadence T-S-D-T in all major keys. In all assignments, write soprano and alto on the treble staff, and tenor and bass on the bass staff.

INVERSIONS OF T, S, AND D

Triads need not always occur with the root in the bass. The lowest voice, being not only the fundament of a harmony but also a melodic progression, may carry any of the other chord tones. Such chords where the bass is given a tone other than the root are called *inversions*. The first inversion of a triad appears with the third in the bass; and the second inversion, with the fifth.

23.



In these examples, as well as in all cases where chord functions are to be identified, the bass note is indicated by a numeral under the letter signifying the function. Our problem is the proper use of these inversions along with chords in their original positions.

RULES

1. Use the first inversion freely.
2. In the first inversion of a major triad, double preferably the root; to good advantage, the fifth; and never the third.

3. The second inversion appears as a passing chord, the bass leading into it by step and continuing in the same direction out of it by step:

24.



25.



4. In the second inversion of a major triad, always double the bass.

DISCUSSION

Inverting a chord does not alter its nature or harmonic unity. Inversions are, therefore, identified by the same name as the original chord: the first inversion of T, for instance, is still a tonic chord.

The first inversion has sometimes been called a *sixth chord*, and the second inversion a *four-six chord*. These names are derived from the practice of figured bass, which has nothing to do with the theory of harmony. Whereas the latter explains chords in terms of functions of tension and rest, the practice of figured bass is merely an abbreviated method of writing out harmonies. Instead of putting in notes all four voices of a harmonic setting, composers have found it most convenient to write out only the bass line and indicate the harmony by figures under it which number the desired intervals from the bass up. For economic reasons, the intervals of a third and fifth are usually not specifically mentioned and are simply implied unless contradicted by other numbers. Accordingly, no figures under a bass note indicate a triad; the figure 6 (the third being implied) indicates the first inversion; and the figures $\frac{6}{4}$ (the fourth ruling out the third) indicate the second inversion.

In the nomenclature of figured bass we have referred to a "four-six" chord, rather than a "six-four" chord. The latter name is popular in many American textbooks; but our preference for naming chords consistently from the bass up rather than from the highest interval down seems to be more logical, because harmonies are built on top of a bass and intervals are understood in ascending order in their relation to the bass.

The nature of the passing and the neighboring four-six chords suggests their placement on the weak beat of the measure.

The careful treatment of the second inversion, as indicated by its restricted use, is explained by the inherently dissonant character of the fourth. The dissonance becomes strongly manifest if the fourth is sounded against the bass, as is the case in the second inversion. The dissonance of the fourth is "covered," and hence acceptable, if other chord tones are placed below it, as is the case in some positions of the triad and first inversion:

26.



The ambiguous quality of the fourth, which makes it a dissonance when heard by itself but a consonance when heard as inversion of the fifth, has puzzled many theorists. The problem properly belongs in the realm of music psychology. How can an interval sound like a consonance and act like a dissonance? Or the other way around?

The differentiation between second inversion used in passing and double suspension resolving into a dominant chord is reflected in the functional symbols:

Invent similar basses and melodies. Realize at least a dozen basses and harmonize at least a dozen melodies before proceeding.

Here and in all subsequent assignments work out each example at least a second time in another key. Eventually all keys should be utilized. Change the position of the opening chord when transposing an example.

5

TONIC RELATIVE, SUBDOMINANT RELATIVE, AND DOMINANT RELATIVE

Building triads on the steps of the major scale not yet explored, we find that three of them will be minor triads, i.e., will consist of a minor third and a perfect fifth. They are located on the second (II), third (III), and sixth (VI) degrees of the scale. The triad on II is called the *subdominant relative* (Sr); on III, the *dominant relative* (Dr); and on VI, the *tonic relative* (Tr). We must learn to use these chords within the movement of a composition.

RULES

1. Double the root whenever possible.
2. Double the third or fifth if convenient.

DISCUSSION

As their names and compositions imply, Tr, Sr, and Dr are close relatives of T, S, and D, respectively. C major and A minor, for instance, are relative keys as well as relative chords. The chords differ only by the exchange of one note. Hence, Tr, Sr, and Dr are used vicariously for their major relatives. Their functions, or driving forces, within the course of a musical movement are similar to, though somewhat weaker than, the functions of their respective major relatives, T, S, and D.

The tonic relative reveals its nature as a substitute of the tonic particularly in the progression V–VI, which is called a

deceptive cadence. D resolves into Tr instead of into the really expected final resolution T. In the deceptive cadence it is advantageous to double the third of Tr (the actual root of the anticipated T):

34.



The reasons given above against doubling the third in a major triad also explain the propriety of doubling the third in a minor triad. The overtones of the minor third all lie within the given tonality. More important still, the doubled third in a minor triad emphasizes the allegiance to the related, main function.

The triad on the seventh degree of the major scale—the only one not yet discussed—arouses our suspicion by the fact that its outside boundary is a diminished fifth, i.e., a strong dissonance. The chord thereby becomes less self-sufficient than the other six chords, which all are contained within a perfect fifth. It is not a basic triad like those of the three main functions (T, S, and D) and their relatives (Tr, Sr, Dr). We shall discuss it later in its proper place.

ASSIGNMENT

Modify the complete cadence T-S-D-T by the vicarious use of relative chords. Thus write, in all keys, T-Sr-D-T, T-S-Dr-T, T-Sr-Dr-Tr, Tr-Sr-D-T, etc.

Realize the following basses and harmonize the following melodies by using all chords discussed so far.

35.



36.



37.



38.



39.



40.



Invent similar basses and melodies. Realize at least a dozen basses and harmonize at least a dozen melodies before proceeding.

6

INVERSIONS OF Tr, Sr, AND Dr

The triads on Tr, Sr, and Dr can be used in inversions exactly like those on T, S, and D. The first inversion appears with the third in the bass; and the second inversion, with the fifth in the bass.

RULES

1. Use the first inversion freely.
2. In the first inversion of a minor triad, preferably double the root; and, as a perfectly correct second choice, either the third or the fifth.
3. The second inversion of a minor triad, like that of a major triad, appears as a passing chord.
4. In the second inversion of a minor triad, always double the bass.

DISCUSSION

The use of inversions makes smooth bass lines possible. For example, instead of writing:

41.



the same harmonies can now be employed on a less jumpy bass line:

42.

A musical staff with a treble clef and a bass clef. The first four notes are: T (Treble clef, middle C), S (Treble clef, D), D (Bass clef, C), and Tr (Bass clef, B). The notes are written as quarter notes.

ASSIGNMENT

Realize the following basses and harmonize the following melodies by using the triads and inversions of T, S, D, Tr, Sr, and Dr.

43.

The first staff of music is written on a five-line bass clef. It contains a sequence of notes: two eighth notes (G2, A2), followed by a quarter note (B2), another eighth note (C3), a quarter note (D3), an eighth note (E3), a quarter note (F3), an eighth note (G3), a quarter note (A3), an eighth note (B3), a quarter note (C4), an eighth note (D4), a quarter note (E4), an eighth note (F4), a quarter note (G4), and finally a half note (A4) which is tied to the next staff.

44.

The first staff of music is written on a five-line staff. It begins with a treble clef and a key signature of one flat (B-flat). The melody consists of the following notes: G4 (quarter), A4 (quarter), Bb4 (quarter), A4 (quarter), G4 (quarter), F4 (quarter), E4 (half), and D4 (half). The staff ends with a double bar line.

45.

46.

Invent similar basses and melodies. Realize at least a dozen basses and harmonize at least a dozen melodies before proceeding.

THE DOMINANT SEVENTH CHORD

The simple triads built on the first six steps of the major scale can be increased in complexity and intensity by the addition of another third. The new characteristic tone forms the interval of a seventh with the root and accordingly gives the chord its name, *seventh chord*.

47.



The seventh chord on the dominant (D⁷) assumes special significance, not only because of its position on a crucial step of the scale, but also because of its innate cohesion as a unified chord. In all other seventh chords two pairs of perfect fifths are interlocked (between root and fifth, and third and seventh, respectively); hence these seventh chords are heard as composite structures made of two sets of triads or, at best, of one triad plus a passing note leading down from the octave. In the dominant seventh chord, in which a perfect fifth is interlocked with a diminished fifth (between third and seventh), the unity of the chord is not disturbed. Moreover, the notes of the dominant seventh chord come closest to the natural distribution of the overtone series. Their conformity to the acoustical law is directly accountable for their psychological effect as a unity.

The special tension of the dominant seventh chord requires careful handling of the seventh.

RULES

1. The seventh should be resolved by step downward.
2. A good way of introducing the seventh is by step, preferably from above, or by tying it over from the preceding chord, if possible.

DISCUSSION

The strong dissonance of the diminished fifth (between third and seventh) determines the resolution. It lies in the nature of any diminished interval to contract, just as it lies in the nature of any augmented interval to expand. Hence, the dominant seventh chord in major permits of only two resolutions:

48.



Dominant Cadence

49.



Deceptive Cadence

In order to land on a full chord in the dominant cadence, the fifth of the dominant seventh chord may be omitted, in which case the root is doubled but never the third or seventh. Proper voice leading is sometimes, particularly at the end of a composition, sacrificed to rich sound: the leading tone may descend a third into the fifth of the final chord, but only if the soprano takes the root and thereby at least gives the illusion of a proper resolution:

50.



The movement from a perfect fifth to a diminished fifth, as it may occur in the progression $D \begin{smallmatrix} 8-7 \\ 6-5 \\ 4-3 \end{smallmatrix}$, cannot be called strictly parallel and is therefore permitted.

51.



$D \begin{smallmatrix} 7 \\ 6-5 \\ 4-3 \end{smallmatrix}$

The opposite movement from a diminished fifth to a perfect fifth is less advisable because of the contracting tendency of any diminished interval.

It is noteworthy that the seventh added to the dominant chord is a note representative, as it were, of the subdominant (*f*, in C major).

ASSIGNMENT

Realize the following basses and harmonize the following melodies, employing the dominant seventh chord wherever indicated by the figure 7:

52.



53.



54.



55.



Invent similar basses and melodies. Realize at least a dozen basses and harmonize at least a dozen melodies before proceeding.

8

OTHER SEVENTH CHORDS

The seventh chords on the other steps of the scale are constructed analogously to the dominant seventh chord. The intervals in the basic triads were all consonances, and the chords consequently consonant chords. The interval of a seventh is a dissonance, and the seventh chord accordingly a dissonant chord. A major seventh, as found on T and S, is more dissonant than a minor seventh, as found on Sr, Dr, D, and Tr. Proper treatment of the tension inherent in any seventh chord depends on the manner in which the dissonant seventh is introduced and resolved.

RULES

Treat all seventh chords analogously to the dominant seventh chord.

DISCUSSION

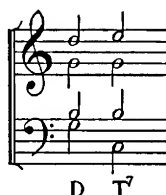
Treatment of the seventh derives its justification from the true nature of the interval. Any dissonance produces a shock which calls for adequate preparation and a definite resolution. The seventh is melodically a passing dissonance, originating in the octave and resolving into the sixth. The octave, when not present in the composition, is implied.

The major seventh, being more dissonant than the minor seventh, should preferably be introduced exclusively by being tied over from the preceding chord:

56.



57.



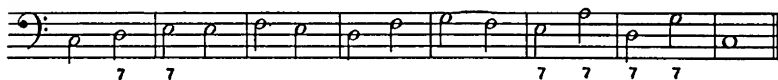
The third of the chord will best avoid parallel fifths with the seventh, which is forced to descend, by ascending by step. The root and fifth are free within the boundaries set by the prescribed movements of seventh and third.

In a sequence of seventh chords, the fifth will be omitted and the root doubled in alternate chords.

ASSIGNMENT

Realize the following basses and harmonize the following melodies, employing seventh chords wherever indicated by the figure 7:

58.



59.



60.



61.

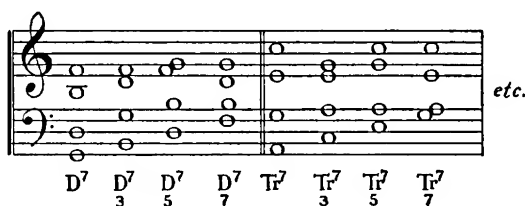


Invent similar basses and melodies and work out at least two dozen exercises before proceeding.

INVERSIONS OF SEVENTH CHORDS

The dominant seventh chord and analogously all other seventh chords can be inverted just like triads except that now we shall have to deal with three inversions. The first inversion has the third in the bass; the second inversion, the fifth; and the third inversion, the seventh.

62.



RULES

1. Introduction and resolution of the seventh in inversions is the same as in root position.

2. The third inversion of chords containing a major seventh (T^7_7 and S^7_7) should be avoided.

DISCUSSION

The seventh is by its character an interval placed on the top of a triad. The dissonant strength of the major seventh—greater than that of the minor seventh—offers considerable resistance to being placed at the bottom of the formation.

In inversions, as well as in root position, the figured-bass notation numbers the intervals from the bass up without re-

gard to functional values. Thus the figures signifying the first inversion of a seventh chord are $\frac{6}{5}$ (the third being implied); the second inversion, $\frac{4}{3}$ (the sixth being implied); and the third inversion, 2 (the sixth being implied as usual and the fourth omitted because misinterpretation is not possible).

ASSIGNMENT

Realize ten basses and harmonize ten melodies similar to the ones given below, and employ a maximum of seventh chords in original position and inversions. It will help to remember that a tone descending by step is likely to be a seventh; one ascending by step, a third.

63.



THE DIMINISHED TRIAD

In all seventh chords, we remember, the fifth could be omitted without changing the character of the chord. Omission of root, third, or seventh would mutilate a seventh chord beyond proper recognition. The only exception is the dominant seventh chord, in which, by virtue of the tritone, the root may be omitted with impunity. The resultant chord is called a *diminished triad* and must be understood as a dominant seventh chord without root (D^7).

68.



RULES

1. Double the fifth of the chord.
2. Resolve it like a D^7 by leading the seventh downward by step, and the leading tone upward by step.

69.



70.



DISCUSSION

The diminished triad must be understood as a dependent of another chord: it lacks the strong frame of a perfect fifth which identifies all basic triads. The intervals of \mathfrak{D}^7 are accordingly always named in relation to the implied root.

The doubling of the fifth can be explained almost by default of other possibilities. One hesitates to double the leading tone or the seventh. \mathfrak{D}^7 is best used in inversion, the doubled fifth in the bass.

The regular resolution of the diminished triad often encounters such practical difficulties that two alternatives—seemingly unorthodox—become advisable.

71.



In the first instance, the seventh, in order to avoid doubling the major third, does not descend as expected. The resolution of the seventh is taken care of vicariously, as it were, by another voice—in this case, the strong ascending bass. The progression in fifths between soprano and alto is not strictly parallel and hence is admissible.

In the second instance, the seventh is doubled. This exceptional treatment can be explained only by analogy with that of a regular pure triad.

ASSIGNMENT

Realize the following basses and harmonize the following melodies, using the diminished seventh chord wherever indicated.

ADDED SIXTH

The intensity of the dominant chord and of its drive into the tonic was significantly increased by the addition of a seventh, a note which preserved the harmonic unity of the chord while yet introducing an element easily associated with the subdominant function (*f*, in C major). Similarly, the intensity of the subdominant chord and its harmonic drive can be increased by the addition of a note which will preserve the harmonic unity of the chord while yet introducing an element easily associated with the dominant function. This note is the sixth. It gives the chord its name, *added sixth*, or *sixte ajoutée*.

75.



In this sense, the chord was defined by Rameau and used by the masters.

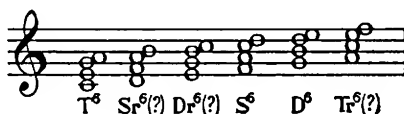
76. MOZART, *Piano Sonata, K. 281. Rondo.*

77. BEETHOVEN, *Waldstein Sonata*. First Movement.

This chord looks like Sr^7 but its function is really S^6 . The two possible interpretations of this chord are distinguished from one another only by the resolution following.

By analogy with S^6 , chords with an added sixth can be built also on the other steps of the scale:

78.



All these chords assume ambiguous roles. Each can be heard as the first inversion of a seventh chord, and the seventh will be treated accordingly. But each can also be heard as a strong triad to which a sixth has been added.

RULES

1. The added sixth, which constitutes the dissonance against the triad, usually is resolved upward by step.
2. The fifth of the chord, in order to escape misinterpretation as seventh in the first inversion of a seventh chord, usually remains where it is.

DISCUSSION

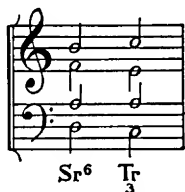
The chords Tr^6 and Dr^6 are used very rarely. The chafing dissonance of the minor second suggests that these chords be

treated as first inversions of S^7 and T^7 , respectively, with care analogous to that allotted to the interval of the major seventh.

The chords T^6 , S^6 , and D^6 , on the other hand, are the most convincing representatives of the added sixth because a major triad forms their foundation. Actually they bring the sounds of the three main harmonic functions, each combined with the sound of its relative function.

Sr^6 assumes special strength because of the tritone ($f-b$, in C major) within the chord. The resolution of Sr^6 is prescribed by the resolution of this critical interval:

79.



80.



ASSIGNMENT

Realize the same basses and harmonize the same melodies as in Chapter 9, resolving each $\frac{6}{5}$ chord as a chord with an added sixth.

SECONDARY DOMINANTS

Each triad built on the various steps of the major scale can be preceded by its own dominant chord. These dominants introduce tones which do not belong to the key proper. They serve as dominant functions of functions and are therefore called *secondary dominants*. The functional symbol of a secondary dominant is put in parenthesis, indicating that it does not pertain to the basic tonality but only to the chord immediately following the parenthesis.

RULES

1. Feel free to use major triads built on every step of the scale.
2. Any major triad containing a note foreign to the tonality fulfills a secondary function.
3. Any chromatic alteration of a note following the unaltered note must be given to the same voice.

DISCUSSION

A secondary dominant emphasizes the following chord to which it pertains. It "tonicizes" it for the moment without necessarily modulating into it. The concept of secondary functions can be extended to include all functions besides the dominant. Thus, under some circumstances, a chord containing tones alien to the established tonality may be a secondary subdominant of the harmony immediately following it. A raised tone, in general, will connote a secondary dominant; a lowered tone, a secondary subdominant. In all cases, the

symbol immediately following the parenthesis indicates the function to which the secondary function refers. If no primary function occurs for several beats, the symbols for several secondary functions can all be placed within one parenthesis. The following examples may serve to illustrate the use of symbols for secondary functions.

81.



82.



83.



84.



A deceptive cadence involving secondary functions is written thus:

85.



The symbol of the actual primary function to which the symbol inside the parenthesis refers must be written down and then crossed out immediately following the parenthesis. The symbol of the “deceptive” chord taking the place of the expected one is then written next to the crossed-out symbol.

For convenience, the secondary dominant of the dominant, (D)D, is also called the *second dominant*, D_2 ; and the secondary subdominant of the subdominant, (S)S, is also called the *second subdominant*, S_2 .

86.



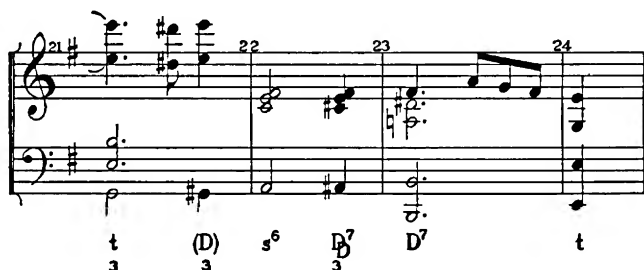
The second dominant and the subdominant show much resemblance to one another, differing only by the chromatic alteration of one tone. Both harmonies usually lead into the dominant. D_2 appears mostly as a variant of, or substitute for, the subdominant.

87.



The following phrase from a Beethoven sonata illustrates this usage.

88. BEETHOVEN, *Piano Sonata, E Minor, Op. 90. First Movement.*



In the practice of figured bass, a sharp after a figure demands the chromatic raising of that interval; a flat, the chromatic lowering. The absence of figures indicating a triad, any change in the character of the third of a triad is marked by #, ♭, or ♮ below the bass note.

In the resolution of a secondary dominant, the leading tone may take a short cut directly to the seventh of the following chord:

89.



In this as in any sequential chain of seventh chords, the fifth is omitted and the root doubled in alternate chords.

The cross relation, which exists between a tone occurring in a chord and recurring, chromatically altered, in another voice in the next chord, is forbidden because it is difficult to sing.

90.



91.



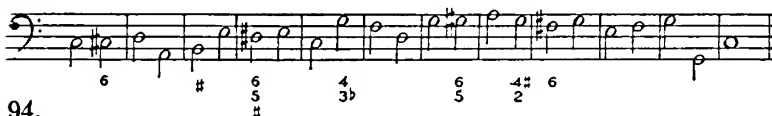
ASSIGNMENT

Realize the following basses and harmonize the following melodies, using secondary dominants wherever indicated or convenient. Invent similar basses and melodies. Write the proper functional symbol under each chord.

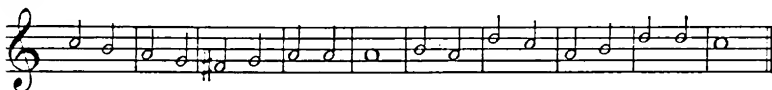
92.



93.



94.



95.



III

The Minor Mode

RULES

1. Chords in the minor mode progress exactly as in the major mode.
2. They can be used in inversions as well as in root position.

DISCUSSION

The relation of the minor mode to the major mode presents one of the basic and most complicated problems of Western music. The supremacy of the major scale is characteristic of the music of the last three centuries. In view of the historical fact that the major scale has actually been the only basic scale of our classical music and even of contemporary music (to the extent that contemporary music is not "controversial"), the analogous orientation of a practical textbook is justified. But precisely this one-sided trait of our tonal system has brought about the present crisis of tonality, which can be superseded only by the adoption of a more comprehensive concept of tonality.

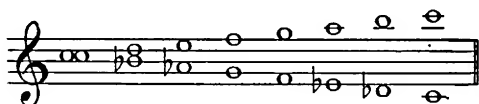
The many theorists who have expressed their thoughts on this problem fall into two camps. One group believes that the minor mode is subordinate to the major mode. The other group believes that the minor and major modes are two opposite, equivalent poles of one tone system.

In recent generations, the supremacy of the major mode has found many advocates (Helmholtz, Hindemith). The overtone series, it is argued, contains the major triad in a pure and prominent position. The minor third is an artistic "clouding" of the natural major third and is, therefore, aesthetically less satisfactory. The major scale is the only basic scale of our present tonal system. Even the natural minor scale cannot be considered a basic scale because it is built up of two different tetrachords distinguished by the position of the half step. Moreover, the minor mode has been assimilated to the major

mode for more than three centuries by the introduction of accidentals, like the raised leading tone.

Against the supremacy of the major mode runs a tradition asserting a natural polarity of major and minor on equal terms (Zarlino, Rameau, Goethe, Riemann, Kauder, Kayser). The tradition is built on strong mathematical, musical, aesthetic, and philosophical arguments. Just as the division of a string by the significant numbers one to six produces the major triad, so the multiplication of a string by the same numbers produces the minor triad. The minor scale mirrors the major scale exactly:

98.



The “sad” effect of the minor mode complements the “satisfactory” effect of the major mode to form an organic whole. Major and minor in music represent the polarity that appears elsewhere as positive and negative, male and female, and so forth.

It seems that a complete and logical system of harmony can be built on the basis of either theory. We should remember both explanations without becoming involved in further speculations within the context of this book.

We have identified the natural minor scale in terms of its relative major scale, with which it shares exactly the same notes while focusing on a different beginning and closing point (A minor–C major). The minor scale that shares with a major scale the beginning and closing point (i.e., the tonic note) is called its parallel (C minor–C major).

The deceptive cadence (V–VI) in minor results in a major chord, exactly the opposite to the deceptive cadence in the major mode:

99.



The substitution of a subdominant function (sR) for the expected tonic seems puzzling, but one can reconcile the deceptive cadence in minor (d-sR) with that in major (D-Tr). In both instances, the three upper voices progress as expected; only the bass “deceives” by sounding the sixth instead of the tonic.

ASSIGNMENT

Realize the following basses and harmonize the following melodies, indicating the functions under each chord.

100.



101.



102.



103.



SEVENTH CHORDS, INCLUDING INVERSIONS AND ADDED SIXTH

As in the major mode, a seventh can be added to each chord built on the various steps of the minor scale.

104.



These seventh chords occur in original position and all inversions.

RULE

Seventh chords and their inversions in the minor mode are treated exactly like seventh chords and inversions in the major mode.

DISCUSSION

Seventh chords containing a major seventh have to be treated as carefully here as in the major mode. Their functions in the minor mode are tR and sR . The seventh chord containing the diminished fifth now functions as dR ; proper resolution of the dissonant interval has to be watched. The first inversions of seventh chords, particularly t , s , and d , are again ambiguous and invite treatment as triads with an added

sixth. s^6 contains the tritone, analogous to Sr^6 in the major mode.

105.



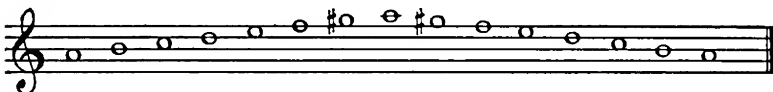
ASSIGNMENT

Harmonize approximately two dozen basses and melodies in the minor mode, using triads and seventh chords in original positions and inversions, and chords of the added sixth. Write function and position under each chord.

HARMONIC AND MELODIC MINOR

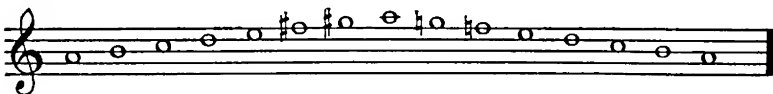
Under the influence of the major mode, the leading tone in the minor scale is often raised. The resulting scale is called the *harmonic minor* because it represents a harmonic drive of the minor mode.

106.



The unnatural skip of an augmented second caused by the raised leading tone can be avoided by raising the sixth as well, particularly when ascending. The resulting scale is called the *melodic minor* because the sixth is raised for melodic reasons alone and plays no part in the basic harmony of the mode:

107.



Do these alterations influence the functions of the various chords built on the steps of the minor scale?

RULES

1. Treat the harmonic and melodic minor modes like the natural one.

2. Use the raised leading tone only when really leading into the tonic.

3. Use the raised sixth only when leading into the raised seventh.

DISCUSSION

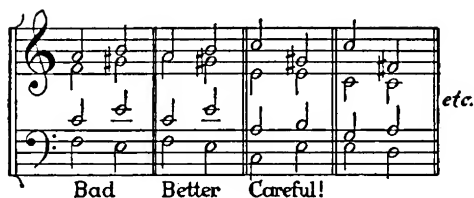
Theoretically, harmonic and melodic minor scales must be understood as hybrid formations in which elements of the major scale (major sixth and major seventh) are grafted on a natural minor structure for cadential purposes. Practically and historically, however, they have been prevailing since the seventeenth century; classical music knows no other minor scales. Whereas the tonic remains a minor chord in all three forms of the minor mode, the subdominant turns into a major chord in the melodic minor, and the dominant turns into a major chord in both the melodic and harmonic minor. To avoid ambiguities, the symbols for minor or major subdominant or dominant may be differentiated one from the other by the use of capital letters for major chords and small letters for minor chords.

108.



Raising a note increases its upward drive, just as lowering it points downward. Hence, major sixth and major seventh are employed in the minor mode primarily in ascending directions. The altered notes create the danger of numerous new augmented or diminished skips, all of which are forbidden and should be carefully avoided.

109.



The raised leading tone in minor is only one example of the mixing of major and minor elements within one mode. Another example, in the opposite direction, is the use of a minor subdominant chord in the major mode.

110.



Recognition of the nature of the major and minor cadences leads us to a very important generalization. *Every major triad has the tendency to become a dominant. Every minor triad has the tendency to become a subdominant.*

ASSIGNMENT

Harmonize the complete cadence in all three forms of the minor mode (t-s-d-t, t-s-D-t, t-S-D-t) in all keys.

Find examples of a minor subdominant in compositions in the major mode. The closing measures of the second movement of the *Third Symphony* by Brahms will provide an instructive starting point (T-S-T paralleled by T-sR-T).

THE DIMINISHED TRIAD

In the minor mode the diminished triad is found on the second degree of the scale corresponding to \mathbb{D}^7 in the major mode. Its imperfect boundaries again force us to interpret it as a fragment of another, more complete, chord. Usage discloses it as a subdominant chord with an added sixth and a missing fifth:

111.



Its true nature is fully revealed in its occurrence in the complete cadence:

112.



RULES

1. Resolve the diminished fifth by contracting it.
2. Always double the root.

3. Use the diminished triad in minor to best advantage with the real root in the bass.

DISCUSSION

The diminished interval within the chord prescribes the resolution. It is well to remember that the diminished triad in the major mode has a dominant function, and in the minor mode a subdominant function.

ASSIGNMENT

Use the same basses and melodies as in the earlier exercises in the minor mode; but now employ the diminished triad as frequently as possible as a substitute for the subdominant chord.

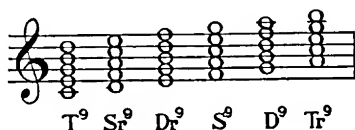
IV

Ninth, Eleventh, and Thirteenth Chords

THE DOMINANT NINTH CHORD

Triads and seventh chords built on the various degrees of the scale can be further enlarged and intensified by the superposition of another third. The new note will form the interval of a ninth, major or minor, with the root.

113.



The ninth chord on the dominant (marked D⁹) assumes a special role compared to all other ninth chords, analogous to that of the dominant seventh chord as compared to all other seventh chords. The five tones of D⁹ form a unit and are heard as a unit; they are identical with the first nine tones of the overtone series. The cohesion of the five tones of other ninth chords is less convincing; the ninth in T⁹ or S⁹, for instance, sounds like a superimposed suspension.

The ninth being a dissonance, its introduction and resolution require special care.

RULES

1. Introduce the ninth either by tying it over from the preceding chord or by leading into it by step from above.
2. Resolve the ninth always downward by step.

3. The fifth is the note most easily spared in a four-part setting.

DISCUSSION

The treatment of the ninth is similar to that of the seventh. Both are resolved in the same manner. The ninth best preserves its superstructure character by being kept in the soprano; it is completely out of place in the bass. The third of the chord will again have to ascend by step in order to avoid parallel fifths with the descending seventh. The root is free but has little choice in order to conform with the forced resolution of the other tones. The occasional omission of the root (D^9) does not detract from the dominant character of the chord.

114. WAGNER.



In a five-part setting the fifth, which is also free, will have to beware of parallel fifths with the ninth.

The addition of a ninth increases the tension of a dominant seventh chord. Hence the progression D^7-D^9 is possible whereas the reverse, D^9-D^7 , sounds unsatisfactory.

The subdominant element introduced into a dominant function by the seventh of D^7 is corroborated and strengthened by the ninth. D^9 actually presents simultaneously the sounds of the dominant and the subdominant chords. Because the minor subdominant chord has been admitted into the major mode—as explained in the chapter on harmonic and melodic minor— D^9 often appears with a minor ninth in the major mode.

115.



ASSIGNMENT

Study the way in which Beethoven introduces and resolves the dominant ninth chord in the *Leonore Overture No. 3*, measure 610.

OTHER NINTH CHORDS

69

117.



118.



THE DIMINISHED SEVENTH CHORD

The dominant ninth chord with a minor ninth distinguishes itself from the other ninth chords through the fact that the root may be omitted. In this incomplete form it is called the *diminished seventh chord* (\mathfrak{D}^{9b}) because its outside boundary is a diminished seventh.

119.



Proper introduction and resolution of the diminished seventh chord are found with reference to the implied (missing) bass.

RULES

1. Introduce the diminished seventh chord without necessarily observing the restrictions proper to the complete dominant ninth chord.
2. Resolve the diminished seventh chord like the dominant ninth chord, i.e., in the following four ways:

120.



DISCUSSION

If the root of any ninth chord other than D^9 is omitted, the resulting chord is complete in itself and therefore not recognizable as an incomplete ninth chord.

The use of a minor ninth in a major dominant chord can be explained by reference to another minor chord commonly borrowed by the major mode, the minor subdominant. The dominant ninth chord was previously defined as the simultaneous sounding of the dominant and subdominant triads; the latter may well appear in either of its two forms: with a major or a minor third. The peculiar strength of D^{9b} is caused by the many dissonant relations within it; not one fifth is perfect:

121.



The four resolutions of D^{9b} are conditioned by the contracting forces of the inherent diminished intervals. Ninth and seventh descend; the fifth is free but will usually ascend in order to avoid parallel fifths with the ninth; and the third (the leading tone) ascends because of its leading power as well as in order to avoid parallel fifths with the seventh. Resolutions *a* and *b* are the authentic cadences in major and minor, respectively. Resolution *c* is the deceptive cadence in minor

(the minor ninth making the deceptive cadence in major impossible). Resolution *d* is nothing but a delayed resolution *a* or *b*: seventh and ninth are suspended for one beat before descending. The delay may cause a shift of tonality down one key in the circle of fifths: the original incomplete dominant ninth chord (marked D^{9b}) may be heard as the incomplete dominant ninth chord of the dominant (marked D^{9b}) of the final resolution.

122.



In harmonizing or analyzing diminished seventh chords it is well to remember that occurring sharps are, as a rule, leading tones; and occurring flats, as a rule, sevenths or ninths.

The diminished seventh chord can be used in all inversions. The absence of the root mitigates the objection to placing the ninth in the bass.

Classical composers seem to have a predilection for presenting the D harmony as a diminished seventh chord. Witness the following example by Bach:

123. BACH, *Well-tempered Keyboard*, Fuga II. Final Cadence.

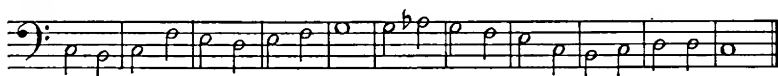


$\text{B}^{\flat 9}$ is characteristically used by Mozart and Beethoven in leading toward the second theme in sonata forms (cf. Beethoven, *Piano Sonata, Op. 31, No. 2*, first movement). Mozart almost makes it a rule to employ $\text{B}^{\flat 9}$ before the four-six chord (D_4^6) of the cadenza in an instrumental concerto.

ASSIGNMENT

Realize the following basses and harmonize the following melodies, using the diminished seventh chord as often as possible. Invent at least two dozen similar basses and melodies and develop them into four-part settings before proceeding.

124.



125.



126.



127.



128.



FOUR SPELLINGS OF THE DIMINISHED SEVENTH CHORD

The absence of perfect intervals from the diminished seventh chord makes different spellings of the chord easily possible. Each of the four notes can in turn assume the role of leading tone. With enharmonic changes, the following four spellings of the same diminished seventh chord are possible:

129.



RULES

1. Resolve each diminished seventh chord in accordance with its spelling.
2. The implied missing root in each case can be found a major third below the leading tone.
3. The leading tone can be found by arranging the chord in order so that it reads like three minor thirds on top of one another: the leading tone will be in the bass.

DISCUSSION

Another way of finding the missing root is by isolating the one augmented second occurring in $\mathfrak{D}^{9\flat}$. The implied root lies half a step below it.

The possibility of different spellings and, accordingly, different resolutions of the diminished seventh chord is the first step toward tonal indifference.

It is noteworthy that the roots of the four different spellings of a diminished seventh chord form a diminished seventh chord among themselves.

ASSIGNMENT

Write out all resolutions of all spellings of the following chord:

130.



There will be four resolutions of each spelling (as explained in the last chapter), and there will be four spellings—a total of sixteen possible resolutions for each $\mathfrak{D}^{9\flat}$.

THE THREE DIFFERENT DIMINISHED SEVENTH CHORDS

All in all there are three different diminished seventh chords in existence:

131.



A diminished seventh chord on *d* would be an enharmonically changed repetition of one on *b*. The two new \mathbb{D}^{9b} chords (on *c* and *c*-sharp) present the same problems as the \mathbb{D}^{9b} chord treated so far. Each one admits of four spellings.

132.



133.

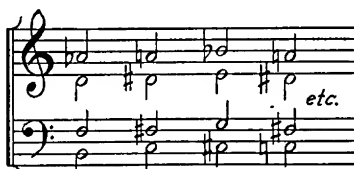


Each spelling permits of four resolutions.

RULES

1. Resolve each diminished seventh chord by first finding its missing root and then treating it like a dominant ninth chord.
2. It is permissible to slide from one diminished seventh chord into an adjoining one by moving all four voices chromatically in the same direction.

134.



DISCUSSION

The enharmonic readings of the various diminished seventh chords enable us to employ all chromatic steps within the octave. Chromatic chords can still be understood in relation to the basic tonality of a composition (or of a melody or bass) by being identified as secondary functions. For example:

135.



ASSIGNMENT

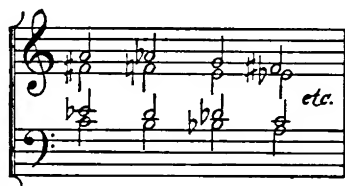
Write the chromatically sliding progression of diminished seventh chords twice—first, proceeding throughout the circle of fifths:

136.



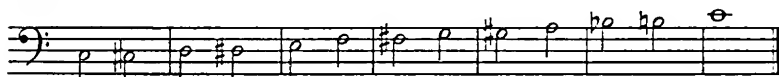
and second, repeating the three chords $\text{D}^{\flat 9} - \text{D}^{\flat 9} - \text{F}^{\flat 9}$:

137.

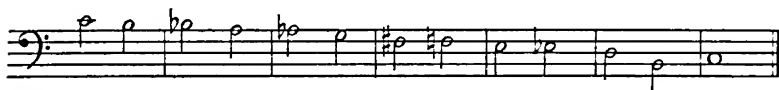


Realize the following chromatic basses and harmonize the following chromatic melodies each in five different ways:

138.



139.



140.



141.



Realize the following basses and harmonize the following melodies, indicating the proper functions under each chord.

142.



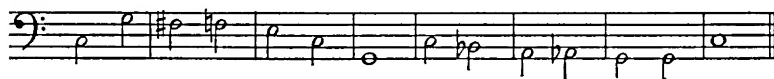
143.



144.



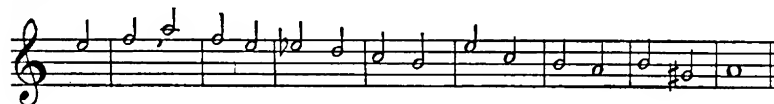
145.



146.



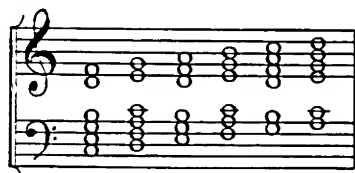
147.



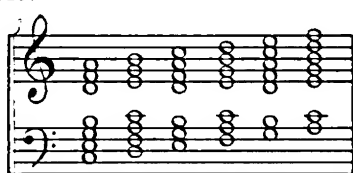
ELEVENTH AND THIRTEENTH CHORDS

Continuation of the chord structure by superposition of thirds results in chords of the eleventh and thirteenth.

148.

T^{II} Sr^{II} Dr^{II} S^{II} D^{II} Tr^{II}

149.

T^{III} Sr^{III} Dr^{III} S^{III} D^{III} Tr^{III}

RULES

1. Introduce and resolve the eleventh and thirteenth like the seventh or ninth.
2. Use eleventh and thirteenth chords only in root position.

DISCUSSION

The dominant eleventh chord combines the complete dominant and subdominant triads, the latter with either major or minor third. The thirteenth chord exhausts all seven tones of the scale and therewith the possibilities of constructing chords by the superposition of thirds. The existence of these last two chords leads to the inference that the distinction between the three main functions of a tonality—T, S, and D—can be further reduced to a distinction between a fundamental consonance—the tonic—and an all-embracing dissonance—the dominant.

The use of eleventh and thirteenth chords in four-part writing is obviously impractical because of the number of tones that would have to be omitted. In full settings the resolutions of these chords will tend to produce parallel fifths between seventh and eleventh, and between ninth and thirteenth. Composers have guarded against this danger by various devices, such as delayed resolution of certain tones. The superstructure character of these chords requires their occurrence in root position.

ASSIGNMENT

Investigate the chord occurring in Beethoven's *Ninth Symphony*, fourth movement, measure 208; and the chord in Mahler's *Second Symphony*, first movement, third measure after figure 20.

Locate about half a dozen eleventh and thirteenth chords in various compositions and study their introduction and resolution. Music from 1860 to 1910 contains many instructive examples. Bruckner, for instance, often builds a climax by pyramiding thirds onto a dominant chord up to an eleventh or thirteenth.

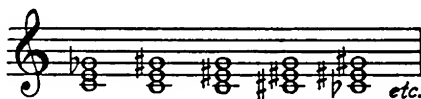
V

Altered Chords

ALTERATIONS OF THE MAJOR TRIAD. THE AUGMENTED TRIAD

The chromatic sharpening or flatting of a chord tone is called an alteration. By wider definition altered chords include also those in which a chromatic appoggiatura creates a special new form. One or more tones of a chord may be altered without changing the function of the chord. Alterations, however, will be of practical value only if the new sound combination cannot easily be confused with a familiar unaltered one.

150.



Hence, the number of altered chords used in practice is limited. Of the possible alterations of the major triad, the sharpening of the fifth produces a new sound combination consisting of two major thirds, *the augmented triad*.

151.



RULES

1. Resolve each alteration in its own direction by leading raised notes upward by step, and lowered notes downward by step.

2. Analyze altered chords by first isolating the altered note, or notes, and then treating the chord according to its unaltered function.
3. Never double altered notes.
4. Do not use in the same chord the altered and unaltered versions of the same note simultaneously.

DISCUSSION

Alteration distorts a chord. It often intensifies it by pointing more directly into the next chord. It can also soften a chord by making it harmonically ambiguous or even indifferent. The opening of Liszt's *Faust Symphony* gives an early example of continued chromatic alteration—a cause and a symptom of modern chromaticism and of subsequent tonal indifference.

The root of a chord may not be altered, for it would thereby lose the essential quality of being a root. The result is no longer an alteration of the same chord but rather a change of harmony.

The figures under the bass indicate the desired alteration by a sharp or flat after the figure denoting the altered interval.

The impracticability of many alterations is easily illustrated in the following examples, each of which sounds like an enharmonic change of the chord following in parenthesis rather than like an altered major triad:

152.



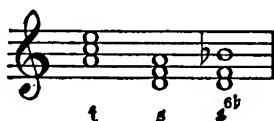
ASSIGNMENT

Find about a dozen augmented triads in musical compositions and study their introduction and resolution.

ALTERATIONS OF THE MINOR TRIAD. THE NEAPOLITAN SIXTH CHORD

Alterations of the minor triad are constructed analogously to those of the major triad. Of the many possibilities, one has proved exceptionally useful. The subdominant chord in minor has strong cadential power, for which the half-step above the dominant is largely responsible. This power can be increased in force by substituting for the fifth of the chord the half-step above the tonic, i.e., a minor sixth. The resulting chord is called the *Neapolitan sixth chord* (marked s^{6b}) because it was popularized by a school of Neapolitan composers. It must be understood as a minor subdominant chord in which a minor sixth has replaced the fifth.

153.



RULES

1. Use the Neapolitan sixth chord like a subdominant chord.
2. Employ s^{6b} only in root position.
3. Always double the root.
4. The skip of a diminished third in the cadential progression s^{6b} -D is proper.

154.



DISCUSSION

The special force of the subdominant chord in minor can rightly be compared to that of the dominant chord in major. The leading tone from above to the tonic lends the Neapolitan sixth chord its particular tension. For purposes of quick recognition only, it is well to remember that s^b looks like a major triad (in first inversion) built on the half-step above the tonic. The subdominant origin of the Neapolitan sixth chord, which should be evident from the way it is used, breaks through in such symptoms as the plausibility of the dissonant skip in the cadence s^b -D (where the sixth proceeds like the fifth that it replaces) or the doubling of the real root. The usefulness of s^b has admitted it into cadences in the major mode even though it properly belongs to the minor mode. This procedure is only another example of borrowing the minor subdominant for a major cadence, similar to the example given by the diminished seventh chord, and analogous to borrowing the major dominant for a minor cadence.

The following Mozart formula will sound familiar:

155.



ASSIGNMENT

Realize the following basses and harmonize the following melodies, using the Neapolitan sixth chord wherever indicated.

156.



157.



158.



Study the first and third movements of Beethoven's *Piano Sonata*, C-sharp minor, *Op.* 27, No. 2, and find every Neapolitan sixth chord. Investigate the extraordinary place in the first movement of the *Eroica* (measures 276 ff.) where fifth and minor sixth are sounded simultaneously.

ALTERATIONS OF THE DOMINANT SEVENTH CHORD. THE FRENCH AND ITALIAN SIXTH CHORDS

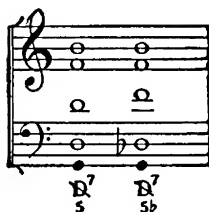
The fifth in the dominant seventh chord lends itself particularly well to alteration because its resolution is otherwise not prescribed. Sharping of the fifth would lead to doubling of the major third in the chord of resolution and is therefore of limited value. Flatting of the fifth, on the other hand, intensifies the force of the chord by the creation of a leading tone, as it were, above the tonic. The altered tone usually is placed in the bass. The complete dominant seventh chord thus altered is called a *French sixth chord* or *augmented three-four-six chord* (D^7_{5b}).

159.



The dominant seventh chord without root, thus altered, is called the *Italian sixth chord* or *augmented sixth chord* (D^7_{5b}).

160.



RULES

1. Resolve the lowered fifth downward by step.
2. Resolve the other notes as you would in a dominant seventh chord.
3. Preferably place the altered fifth in the bass.
4. In the Italian sixth chord always double the seventh.

DISCUSSION

Doubling of the seventh, normally taboo, becomes inevitable by default in the Italian sixth chord: it is easier to move in the wrong direction from the seventh than from either of the two leading tones. Names of the intervals, by the way, are consistently derived from reference to the original chord. The seventh retains its character even though it may appear as the third in the augmented sixth chord. These altered versions of D^7 accomplish their fullest effect if the two leading tones are placed on the outside, the descending one at the bottom and the ascending one on top. The French sixth chord can easily be recognized: it consists of two major thirds separated by a whole tone.

ASSIGNMENT

Realize each of the following basses, and harmonize each of the following melodies, twice—employing first Italian sixth chords and then French sixth chords at the spots marked by an x.

161.



162.



163.



ALTERATIONS OF THE DOMINANT NINTH CHORD. THE GERMAN SIXTH CHORD

In a manner similar to the alteration of D^7 , the fifth may be lowered in D^9 . In a four-part setting the root has to be omitted. The resulting chord is called the *German sixth chord* or *augmented five-six chord* (D^{9b}):

5^b

164.



RULES

1. Resolve the lowered fifth downward by step.
2. Resolve the other notes as you would in a dominant ninth chord.
3. The parallel fifths between fifth and ninth are inevitable and are therefore permitted.

DISCUSSION

This chord affords one of the few examples of permissible parallel fifths. They sound best (i.e., least noticeable in thinning a four-part setting to a three-part setting) between bass and tenor. They appear so often in works of classical com-

posers that they have sometimes been called *Mozart fifths*. Mozart liked to place the German sixth chord at the end of a development section or a transition in general, introducing the dominant chord:

165. MOZART, *Piano Sonata*, F Major, K. 332. First Movement.



Beethoven employs the parallel fifths strikingly in the following example from the finale of his *First Violoncello Sonata*:

166. *Op. 5, No. 1.*



Usually, however, he tries to allay the effect of parallel fifths by modifying the resolution of one of the tones concerned:

167. BEETHOVEN, *Piano Sonata*, F Major, *Op. 10*, No. 2.

In another instance—amusing, considering that Beethoven is involved—he goes so far as to attempt to hide the parallel fifths by wrong orthography:

168. BEETHOVEN, *Piano Sonata*, F Minor, *Op. 57*. Second Movement.

As in the other altered versions of the dominant chord, the two leading tones should be placed on the outsides, the descending one in the bass and the ascending one in the soprano. The German sixth chord is particularly easy to recognize because it sounds like a plain dominant seventh chord. The spelling determines origin and resolution:

169.



170.



ASSIGNMENT

Study the utilization of the altered chords in Schubert's *Eighth Symphony*, second movement, measures 257 and 259 (as compared to measure 250); and in Bach's *Mass in B Minor*, "Crucifixus," measure 51.

Realize the basses and harmonize the melodies given in Chapter 25, employing German sixth chords at the spots marked by an x. Locate approximately one dozen Italian, French, and German sixth chords in musical works and study their introduction and resolution.

VI

Modulation

GENERAL CONSIDERATIONS

Modulation is the process of abandoning one tonality and establishing a new one. It is usually introduced by a pivot chord which belongs to both the old and new tonalities. Hence modulation can also be defined as change of function. In the following example a chord which has subdominant function in the old tonality assumes dominant function in the new tonality.

171.



RULE

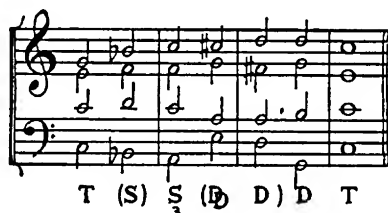
Modulate by introducing a chord which belongs to both the old and new tonalities, with a different function in each.

DISCUSSION

The concept of modulation is justified primarily in long compositions, such as a sonata movement, when the old tonality is really replaced by a new one. In shorter compositions where the tonality is only temporarily relinquished it is advisable to interpret chords that apparently belong to a new tonality as secondary functions of the original tonality. In the

following passage, for example, all chords can be explained in terms of the basic tonality.

172.



The new tonality will be firmly established by a full cadence. The modulation often solves this problem by leading directly into the cadence.

The teaching of modulation, more than of any other phase, manifests the abstractness of harmony. In theory, one can merely demonstrate the closest relation between keys and the shortest way from one key to another. This fact accounts for the inevitable harshness of some illustrations. In the practice of composers, the suggested chord progressions set merely the framework within the rhythmic and melodic cohesiveness. Precisely because the composer is sure of the shortest route, he proceeds in leisure—the opposite of the student. As an exemplification of this point compare Beethoven's extensive path from F major to C major across the whole exposition (138 measures) of the *Pastoral Symphony* with the succinct abstraction of the same modulation to T = S.

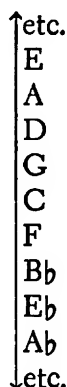
ASSIGNMENT

Name the triads that could be used as pivot chords by belonging to both tonalities in each of the following pairs:

C major–A major; C major–B-flat major; F major–G major; F minor–G major; G minor–D major; E major–D minor; A major–A minor; C minor–D minor; and so on.

CADENTIAL MODULATION UPWARD NOT FARTHER THAN FIVE KEYS

Modulation employing exclusively unaltered chords without enharmonic changes is called *cadential modulation* because it leads into the cadence of the new tonality. Any two tonalities that are not farther apart than five accidentals can be directly connected by a pivot chord. The terms "upward" and "downward" are used with reference to the following arrangement, by accidentals, of the various major and minor keys:



While there are, of course, many individual ways of connecting two tonalities, the following rules outline short procedures of cadential modulation.

RULES

1. Upward from major: Go, for a pivot chord, into the (minor) subdominant of the new key: T – Pivot
= s(or S)–D–T.

173.

T Sr=s D₄⁶ = ₃⁵ T

2. Upward from minor: Interpolate the major dominant chord of the initial key and then continue as if modulating upward from major.

174.

t D=T Sr=s D T

DISCUSSION

Each key contains a chord which can assume a (minor) subdominant function in any key not farther up than five accidentals. Thus by this procedure, B major is the key farthest from C major to be reached by a direct cadence:

175.

T Dr=s D₄⁶ = ₃⁵ T

The reinterpretation of D as S always sounds forced and is best softened by altering S into s.

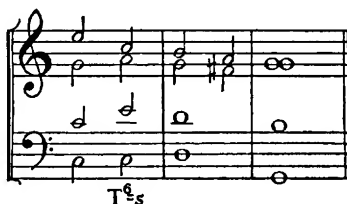
176.



The minor triad assumes more readily a subdominant function, true to its nature.

In the modulation to the dominant, the change of tonic into subdominant becomes most persuasive by the introduction of the sixth.

177.



A good example of this progression can be found in the opening measures of the Prelude No. 1 from the first volume of Bach's *The Well-tempered Keyboard*, where the modulation to G major takes effect in measure 5 (a) rather than in measure 6 (f-sharp). A particularly beautiful introduction of the sixth is heard in measure 5 of the Prelude of Bach's *Suite No. 1 for Violoncello*.

ASSIGNMENT

Select about thirty pairs of major and minor keys, the members of each pair not farther apart from one another than five

accidentals, and modulate upward within each pair according to the suggested procedure. After gaining some initial fluency with triads in root position, introduce inversions and seventh chords.

Find examples of the modulation $T^6=s$ in the Preludes in the major mode in *The Well-tempered Keyboard*.

CADENTIAL MODULATION UPWARD FARTHER THAN FIVE KEYS

Two tonalities separated by more than five accidentals have no pivot chord in common. Hence cadential modulation between them is accomplished in two or more stages by interpolation of a bridge tonality (or bridge tonalities if necessary) within reach of either.

RULES

1. Upward from major: Modulate first into a key which is five accidentals below the aim, and then complete the modulation from there.

178.

179.

t D=S T Dr=s D₄⁶ - ₃⁵ t

DISCUSSION

The interpolated key need not be established by a cadence. If the modulation reaches beyond ten accidentals, two keys have to be interpolated. The farthest modulation is kept for the end. A cadential modulation from G-flat major to F-sharp major is accordingly accomplished in the following manner:

180.

T D=S s T Dr=s ₃³ T Dr=s ₃³ D₄⁶ - ₃⁵ T

ASSIGNMENT

Select about twenty pairs of major and minor keys, the members of each pair separated from one another by more than five accidentals, and modulate upward within each pair according to the suggested procedure.

CADENTIAL MODULATION DOWNWARD NOT FARTHER THAN FIVE KEYS

Downward modulation not farther than five keys can be accomplished by a pivot chord common to both the old and new tonalities.

RULES

1. Downward from major: Go, for a pivot chord, into the (minor) subdominant of the old key: T – s (or S)
= Pivot–S–D–T.

181.

C-A^b

T s=Tr S D₄⁶ – ⁵/₃ T

2. Downward from minor: Insert the tonic relative or the subdominant relative chord of the initial key and proceed from there as if modulating downward from major.

182.

e-B^b

t tR=(D) Sr D⁷ T

cadence is preceded by the double appoggiatura of the four-six chord, the latter must be so manipulated as to fall on a strong beat. To this end a seemingly superfluous chord, or an inversion of an employed triad, may be inserted.

185.

E-F

T s=Dr S $\cdot \frac{6}{3}$ $D_4^6 = \frac{5}{3}$ T

ASSIGNMENT

Select about thirty pairs of major and minor keys, the members of each pair separated from one another by five accidentals or less, and modulate downward within each pair according to the suggested procedure. Use inversions and seventh chords as well as triads.

CADENTIAL MODULATION DOWNWARD FARTHER THAN FIVE KEYS

Downward modulation farther than five keys is accomplished in two or more stages by interpolation of a bridge tonality or tonalities.

RULES

1. Downward from major: Modulate first into the key five accidentals below the starting point, and then complete the modulation from there.

186.

B - F

T s=D T=D D' T

2. Downward from minor: Insert the tonic relative or the subdominant relative of the initial key and proceed from there as if modulating downward from major.

187.

1 $\text{tr}(D)_5$ Tr T_3 $s=Sr$ D^7_3 T

DISCUSSION

The interpolated key need not be established by a cadence. If the modulation reaches beyond ten accidentals, two keys must be interpolated. The farthest modulation is kept for the beginning, contrary to the procedure in upward modulation. A cadential modulation from F-sharp major to G-flat major is accordingly accomplished in the following manner:

188.

T $s=Tr$ T $s=Tr$ T $s=Tr$ S D T

ASSIGNMENT

Select about twenty pairs of major and minor keys, the members of each pair separated from one another by more than five accidentals, and modulate downward within each pair according to the suggested procedure.

CHROMATIC MODULATION

Chromatic modulation makes use of chromatic alteration of one or more notes of a chord belonging to the tonality from which one departs, or to which one goes, or to both. Alteration presents a short cut to modulation, particularly between tonalities lying far apart from each other, by introducing sharps or flats without really abandoning a given tonality. The possibilities of chromatic modulation are less limited than those of cadential modulation and have given individual composers free play for experimentation. In general terms, however, it is possible to distinguish three devices of chromatic modulation:

RULES

1. A chord belonging to the initial tonality is altered until it becomes a chord belonging to the final tonality.¹

189.



190.



2. A chord belonging to the initial tonality is interpreted as an altered chord belonging to the final tonality.

¹ In the following examples each altered chord is marked by a circle around the symbol under it.

191.

191. C-c#

T Dr=(R) s D t

192.

192. A-F

T Sr=(S) D T

3. A chord belonging to the initial tonality is altered until it may be interpreted as an altered chord belonging to the final tonality.

193.

193. D-Ab

T Tr (Tr) (Sr) Sr D₄⁶ = ₃⁵ T

194.

194. B^b-b

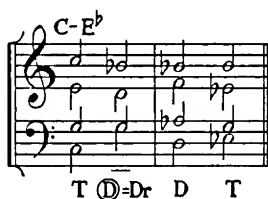
T D (D) (D) D t

DISCUSSION

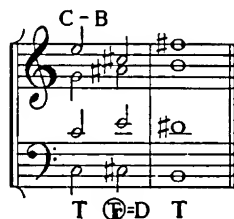
The more tones of a chord are altered, the more daring the ensuing chromatic modulation will sound. A further short cut within chromatic modulation is possible if not both unaltered and altered versions of the same chord are presented, but only the latter. In short, simultaneously with the modulation, the crucial chord moves to a new degree of the scale.

The modulations illustrated under the first and third rules above can accordingly be thus abbreviated:

195.



196.



197.



198.



The progression by an augmented interval in the alto in example 196 is unavoidable. Chromatic modulation implies the use of chromatically altered intervals which can always be explained by reference to the diatonic progression from which they are derived.

The procedure of altering a chord of the beginning tonality while simultaneously moving to a new degree of the scale admits a new generalization: Modulate upward, not farther than four keys, by interpolating the dominant of the new key.

199.



200.



The dominant of the new key in this procedure can be explained as an altered version of a chord belonging to the beginning tonality. The limitation to four keys results from the fact that the farthest of the secondary dominants (i.e., major triads) built on each degree of the scale will lead into a key four accidentals above the original key (in C major, for instance, a B-major chord leading into E major). A key five accidentals above the original key can no longer be reached by this method because the note on which the secondary dominant of the new key would have to be built does not occur in the scale of the original key (in C major, for instance, on F-sharp).

An altered chord particularly useful for chromatic modulation into remote keys is the Neapolitan sixth chord. Its double role as a minor subdominant chord in function and the first inversion of a major triad in appearance makes it an easily usable pivot chord.

201.

♩ - B \flat

t s \flat =T S D T

202.

c - f \sharp

t D=s \flat D t

203.

C - A \flat

T s \flat =S D T

The last of these examples presents in abstract a favorite modulation of Mozart's:

204. MOZART, *Quintet*, G Minor, K. 516. Third Movement.

ASSIGNMENT

Find about twenty examples of modulation in nineteenth-century literature and determine the procedure used. Define the modulation by writing out the symbols for the chords employed. Transitions from first to second subjects in the traditional sonata movement will yield good examples.

ENHARMONIC MODULATION

Enharmonic changes within a chord amount to orthographic reinterpretation, which immediately signifies a change of tonality. This change of tonality, brought about by a new spelling and not by a new sound, cannot properly be called a modulation because acoustically nothing has moved. For all practical purposes, however, an enharmonic change is a useful device for abandoning a tonality quickly. The lengthy cadential modulation from G-flat major to F-sharp major can be enharmonically accomplished in one chord.

205.



RULE

Change the spelling of a chord until it appears to belong to a new tonality.

DISCUSSION

Among the various possibilities there are two standard chords which lend themselves easily to enharmonic modulation: the diminished seventh chord and the German sixth chord.

The diminished seventh chord, as will be remembered, can be spelled in four different ways because each of its four tones can in turn assume the role of leading tone. A change of spelling alone can therefore direct the resolution of the same diminished seventh chord into four different keys. Enharmonic modulation between any two of the four keys to which the tones of the diminished seventh chord form the leading tones can be accomplished by a single bridge chord, as the following examples show:

206.

Example 206 shows a diminished seventh chord in C major, labeled C-E^b. The chord is spelled in two ways: C-E^b-G^b-A^b and C-E^b-F^b-G^b. The first spelling leads to a resolution in C major, and the second spelling leads to a resolution in E^b major. The chord is labeled T D^{9b}₅ = D^{9b}₃ T.

207.

Example 207 shows a diminished seventh chord in C major, labeled C-G^b. The chord is spelled in two ways: C-G^b-A^b-B^b and C-G^b-F^b-A^b. The first spelling leads to a resolution in C major, and the second spelling leads to a resolution in G^b major. The chord is labeled T D^{9b}₇ = D^{9b}₃ T.

208.

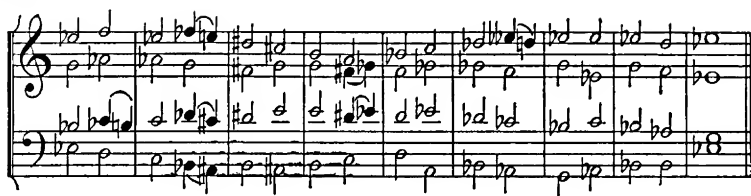
Example 208 shows a diminished seventh chord in A major, labeled A-C. The chord is spelled in two ways: A-C-E^b-G^b and A-C-F^b-G^b. The first spelling leads to a resolution in A major, and the second spelling leads to a resolution in C major. The chord is labeled T D^{9b}₅ = D^{9b}₃ T.

209.

Example 209 shows a diminished seventh chord in E^b major, labeled E^b-A. The chord is spelled in two ways: E^b-A-B^b-C^b and E^b-A-G^b-C^b. The first spelling leads to a resolution in E^b major, and the second spelling leads to a resolution in A major. The chord is labeled T D^{9b}₃ = D^{9b}₇ T.

The reach of the diminished seventh chord can further be widened by inclusion of the four different solutions of each spelling in the process of enharmonic modulation, so that actually sixteen tonalities are connected by one single chord. Some of the possibilities are illustrated below.

210.



The augmented five-six chord, or German sixth chord, is well suited for enharmonic modulation because it sounds like a dominant seventh chord. The augmented sixth, functioning as leading tone in one spelling, becomes the seventh in a dominant seventh chord in another spelling. The two tonalities bridged by this one chord are six accidentals apart.

211.



Not every enharmonic change represents a real enharmonic modulation. Sometimes, contrary to the actual modulation shown in the last example, enharmonic change is introduced merely as an orthographic simplification:

212. BEETHOVEN, *Symphony No. 4*, B-flat Major, Op. 60. First Movement.



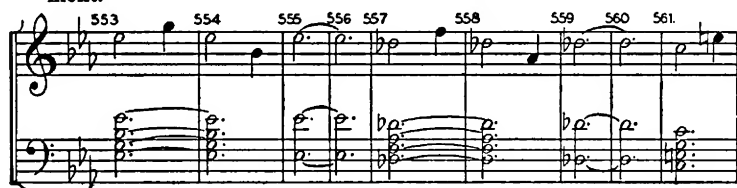
Cadential, chromatic, and enharmonic modulations can of course be mixed, this device being useful when the two tonalities involved are far apart.

213.



Finally, composers occasionally move from one tonality to another by a sudden shift rather than by any process of modulation.

214. BEETHOVEN, *Symphony No. 3*, E-flat Major, *Op. 55*. First Movement.



The imagination of composers sets the limit.

ASSIGNMENT

Select about thirty pairs of major and minor keys and modulate upward and downward within each pair in any way you deem fit. Write out only the bass progression and define each chord by writing the proper function under each bass note.

VII

Harmonic Analysis

SIMPLE CHORALE

Recognition of the harmonic functions within a composition helps toward the understanding of its movement and general structure. It is possible and useful to abstract, as it were, the harmonic scheme of a composition by disregarding melodic and rhythmic qualities. A chorale, such as is found in the cantatas and passions of Bach, meets the task halfway by being almost free of melodic ornamentation and rhythmic complexities. Harmonic analysis of chorales provides a useful means of learning, from masterly examples, the functional values, inherent drives, and architectural qualifications of chords.

RULES

1. Determine the tonality of the chorale and explain all chords in relation to it.
2. Write the symbols for function and position under each chord.
3. Chords that do not belong to the established tonality must be explained as secondary functions.

DISCUSSION

In short compositions, such as chorales, it is useless to introduce the concept of modulation even if apparently distant chords are touched. Tensions and resolutions will be more meaningful if interpreted in relation to a single tonal center. Secondary functions are easily spotted by accidentals that

precede them. Major triads not belonging to the established tonality are as a rule secondary dominants; and minor triads, secondary subdominants.

An illustration follows:

215. BACH, *Passion According to St. John*, Chorale No. 52.

Functional symbols for the first system:

T S (D)₃ Tr Sr ⁷ D₄⁶-₃⁵ T

Functional symbols for the second system:

T Tr D₃ ⁷ D ⁷ T D₃ (S D)

Functional symbols for the third system:

D T (D₇)₃ S₃ (D₇[♭])₃ Sr Tr (D₇)₃ S₃ T₃ D₃⁷ D₃⁷ T

Writing proper functional symbols under each chord is a meaningful but not yet a critical procedure. Functional symbols reveal more than simply descriptive symbols, such as numbers for each degree of the scale; for the former express a definite driving power while the latter simply attach a static label. Functional symbols alone, on the other hand, do not explain the cohesiveness of an entire composition; the func-

tions must be brought into relationship with each other. This task is proper to music criticism.

ASSIGNMENT

Make a harmonic analysis of all chorales in Bach's *Passion According to St. Matthew* by writing the symbols for functions and position under each chord. A comparison of the various harmonizations of the same melody (Nos. 21, 23, 53, etc.) invites special attention.

FREE SETTINGS

The plain harmonic structure of most compositions is covered by melodic and rhythmic complexities. Harmonic analysis of free settings is possible after the nonharmonic factors have been isolated. In melodic terms, these factors are passing notes, auxiliary notes, suspensions, appoggiaturas, trills, and all similar devices pertinent to melody construction and the discipline of counterpoint. In rhythmic terms, these factors are extensions and contractions or varying dynamic stresses, responsible for the pulsation of musical form. Harmonies themselves, moreover, need not appear simultaneously but may appear broken by arpeggios, figuration, and other devices of temporal expansion. Harmonic analysis of a free setting requires the reduction of the composition to its bare underlying chordal structure.

RULES

1. Eliminate purely melodic (contrapuntal and melodic) elements which have no bearing on chord formations.
2. Ignore rhythmic elements.
3. Contract into chords those notes which fulfill a harmonic task—whether they occur simultaneously or in succession.
4. Watch the bass line, particularly in respect to cadences.

DISCUSSION

The following illustrations will help more than words to explain the suggested procedure.

216. BACH, *Well-tempered Keyboard I*, Praeludium II.

The sixteenth notes, besides being carriers of the melodic development, can be grouped to express the inherent harmonies of the composition. In the first measure, *f* in the left hand and *d*¹ in the right hand are auxiliary notes creating trills within the sound of a C-minor triad. In the second measure, elimination of the analogous nonessential chord tones reveals the F-minor triad. In the third measure, a diminished seventh chord emerges on top of the unchanged organ point in the bass.

Reduced to simple chord functions, the opening measures of the Prelude may be thus represented:

217.

$t \quad s \quad D^9 \quad t \quad sR \quad (D) \quad d \quad (D) \quad s$
 $\alpha(s^{6b} \quad D)$

Use of functional symbols permits us to comprehend the harmonic contents of the passage. The first four measures are nothing but a full cadence establishing the tonality of C minor. Measure 5 seems to repeat the opening step of the cadence, substituting the relative for the subdominant; but the next measures show an intensification of the harmonic movement. The dominant in measure 7 is preceded by its own dominant, and for reasons of formal symmetry a secondary dominant is also interpolated before the subdominant in measure 9. So far, the subdominant has consistently appeared in its minor form, and the dominant in its major form. This analysis can be continued through the remainder of the Prelude.

218. RICHARD STRAUSS, *Till Eulenspiegel*, Op. 28.

The notes of the first measure spell out the tonic (F major) triad. The fifth of the triad, c^2 , is surrounded by ornamental auxiliary notes. The first of these, b^1 , is introduced without preparation; and the second one, c^2 -sharp, is left without resolution. The rhythmically weak position in the measure of

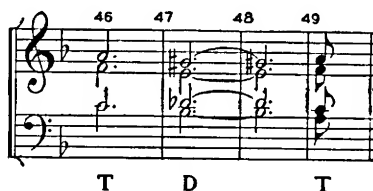
both bears out their secondary importance. The following chord becomes recognizable as a diminished seventh chord with a raised fifth:

219.



The harmonic structure of the whole passage can be identified as a T-D-T progression in which the dominant is strongly intensified by an added ninth and an altered fifth:

220.



221. WAGNER, *Tristan und Isolde*, Introduction.



The harmonies of this famous passage are veiled and intensified by chromatic appoggiaturas, passing tones, and simultaneous shifts. Of the harmonically nonessential tones, f^1 (in measure 2) and g^1 -sharp (in measure 3) enter without preparation, and d^1 -sharp (in measure 3) and a^1 -sharp (in

measure 4) in passing. Reduced to its harmonic core the phrase emerges as a half-cadence in A minor:

222.



The "Tristan" chord (in measure 3) is the first inversion of a subdominant chord with an added sixth. In the following dominant chord, soprano and tenor have exchanged notes: the soprano a^1 , which should normally descend into g^1 -sharp, is pushed up into b^1 by the chromatic appoggiatura; and the tenor b , which would normally be tied into the next chord but is now released from this duty by the soprano, drops a third into the chord tone left open by the soprano.

223. BEETHOVEN, *Symphony No. 3*, E-flat Major, Op. 55. First Movement.

The musical notation for measures 398-431 of Beethoven's Symphony No. 3, First Movement, is shown in two systems. The first system contains measures 398, 399, 408, 409, and 416. The second system contains measures 417, 422, 423, 424, 425, 430, and 431. Below the staves, the harmonic analysis is given as: T, D, S, D, T.

This example gives a good indication of the value of interpreting harmonies in terms of functions. A merely descrip-

tive approach could at best state that the composition, in E-flat major, first reaches out to F major and then, to everybody's surprise, to D-flat major. In functional terms, however, the logic of the passage reveals itself. A simple cadence, involving tonic, subdominant, and dominant, is intensified: the second dominant is used instead of the dominant and, maintaining the balance, the second subdominant instead of the subdominant.

Discovering relationships between various harmonic functions occurring within one composition is a task of imaginative criticism. A basic knowledge of harmony supplies the tools with which to approach this task.

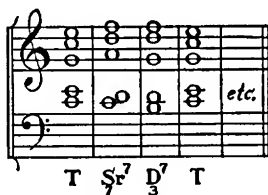
ASSIGNMENT

Analyze the climax of the final movement of Beethoven's *Pastoral Symphony* (measures 219–237) by first writing out the passage reduced to four-part harmonies and then identifying the harmonic functions by symbols under each chord.

Make a harmonic analysis of Chopin's Prelude, C major, Op. 28, No. 1, following the method illustrated by the text analysis of Bach's C-minor Prelude.

Write the whole Prelude No. 1, C major, from the first volume of Bach's *The Well-tempered Keyboard*, reduced to five-part chords, one for each measure. Define the harmonic functions by symbols under each chord:

224.



Make it a habit to analyze the harmonies of any compositions, or passages from compositions, that you hear or perform.

VIII

Realization of Figured Bass

REALIZATION OF FIGURED BASS

Composers of the era of musical Baroque, between approximately 1600 and 1750, used a peculiar writing device which isolated the harmonic scheme of a composition from the melodic factors. Apart from the notation of all participating melody instruments and voices, a separate bass line was written at the bottom of the score following step by step the harmonic progressions of the work. The desired harmonics were abstracted and indicated under the bass in a kind of shorthand consisting of figures and accidentals. The bass line is called *figured bass* or *thorough bass* or *basso continuo*. It was usually played on a keyboard instrument, such as an organ or a harpsichord, reinforced by a violoncello or other bass instrument. The harmonies indicated by the figures were realized on the keyboard. The *basso continuo* thus materializes the inherent harmony of a composition. It holds the composition harmonically together without interfering with the free melodic play of the other parts. One might compare it to the firm bone structure of the human body, invisible under the external adornments of the skin. While the harmonies were clearly prescribed by the figures under it, the exact execution was left up to the individual performer. The keyboard player seldom bothered to write out the desired harmonies but most of the time relied on his ability to improvise the realization of the figured bass in accordance with the instructions given by the shorthand notation. Because existing scores of

Baroque compositions give the figured bass without realization, and modern performers are seldom trained to play the prescribed harmonization by sight, realization of a *basso continuo* becomes an important application of the knowledge of harmony. The improvisatory character of realization of a figured bass, colored by individual composers, resists codification of an exact procedure. The following rules are suggested with a view to the practical problem of harmonizing a Baroque *basso continuo* for use by a modern performer and possible publication in a modern edition.

RULES

1. Clearly distinguish between the notes and signs put down by the composer and your own contribution by using different kinds of colors of pencil, ink, or type.

2. Keep the bass line, with all original figures and signs under it, in the left hand and the three other parts in the right hand of a keyboard score.

3. Keep the right hand in a range providing the best support for the melody parts.

4. The figures under a bass note indicate the intervals to be played from the bass up.

5. No figures under a bass note usually indicate a plain triad.

6. A sharp or flat after a figure demands the raising or lowering, respectively, of the specific interval.

7. A sharp or flat by itself signifies a major or minor third, respectively.

DISCUSSION

The figures and signs under a *basso continuo* do not in the least indicate various chord functions. They provide merely a

shorthand method for writing out harmonies. Like other systems of abbreviation, this one is open to variations by individual composers. Thus the raising of an interval, normally indicated by a sharp, is sometimes further abbreviated into a single line either through the figure (♯) or after the figure (6) to which it applies. Most systems do not specifically mark the third and fifth; these intervals are implied in all chords unless unambiguously canceled by such intervals as second or fourth for the former, and sixth for the latter. Common sense and, in difficult cases, reference to source books of the Baroque should solve all questions that may occur.¹

Whatever the range of the right hand, it should not compete with the melodic play of the top voices. Normally it should fill the gap between bass and melody parts; but in a bass aria, a violoncello sonata, or any composition for a similar low range, the relativity of pitch must be considered. The use of simple chords, one on each bass note, is highly desirable in written-out realizations. In performance, to be sure, free improvisatory elements may be introduced on the basis of the underlying harmonies. A written-out version of such an improvisation, however, would once for all bar the way to any other possible kind of improvisation by petrifying what is meant to remain fluent. Simple chords will permit the expert player to invent his own ornamentation as he goes along; and they will prove adequate and satisfactory to the less skillful performer.

The following example may serve as a practical suggestion.

¹ See, for instance, C. P. E. Bach, *Essay on the True Art of Playing Keyboard Instruments*, trans. and ed. William J. Mitchell (New York: 1948).

ASSIGNMENT

Realize in writing the figured basses of about ten Baroque compositions. Begin with trio sonatas of the seventeenth century and finish with movements from Bach cantatas.

Write the figured bass for the whole Prelude No. 1, C major, from the first volume of Bach's *The Well-tempered Keyboard*.

226.



GLOSSARY

The main purpose of this Glossary is to give brief explanations of some terms prerequisite to the study of harmony. Terms specifically explained in the text have, for the most part, not been included.

ATONALITY. Absence of a tonal center.

CHORD. Simultaneous sound of three or more tones.

CIRCLE OF FIFTHS. A succession of fifths which, in our well-tempered system, returns to the initial tone after twelve progressions.

CONSONANCE. A relation or state of relative rest or relaxation between various tones. Of the many theories that attempt to explain why certain tone relations produce agreeable effects and others produce disagreeable effects, two may be mentioned here:

a) The Pythagorean tradition states that two tones are the more consonant the smaller the numbers of the ratio of their frequencies. Accordingly, there is a definite hierarchy from the perfect consonance of the unison (1:1) down to a physical infinity of ever stronger dissonances. Within the limitation of our musical system, the gradual decline of consonance progresses in the following order: unison (1:1), octave (2:1), fifth (3:2), fourth (4:3), major sixth (5:3), major third (5:4), minor third (6:5), minor sixth (8:5), minor seventh (9:5), major second (9:8, or 10:9), major seventh (15:8) minor second (16:15), and tritone (45:16).

b) Consideration of the overtone series leads to the same result. An interval is the more consonant the sooner it appears in the overtone series. In a similar spirit, Helmholtz measured consonance by the number of overtones two tones have in common.

COUNTERPOINT. The art of writing independent melodies against each other; also, one of these melodies.

DISSONANCE. A relation or state of tension between various tones. See Consonance.

INTERVAL. The pitch relation of two tones to each other, sounded simultaneously or successively. The following table shows the most usual intervals:

227.

Unison				Second		
perfect	augmented	minor	major	augmented		

Third				Fourth		
diminished	minor	major	augmented	diminished	perfect	augmented

Fifth			Sixth			
diminished	perfect	augmented	diminished	minor	major	augmented

Seventh				Octave		
diminished	minor	major	augmented	diminished	perfect	augmented

Each interval has a general and a specific part to its name. The general name (second, third, fourth, etc.) is derived from counting the steps on the scale between the two tones. The specific name (perfect, major, minor, diminished, augmented) describes the particular character of a given interval.

Perfect are the unison, octave, fifth, and fourth, as they occur in either the major or minor scale. A perfect interval becomes augmented or diminished by the chromatic alteration of one of its constituent tones.

Major are the second, third, sixth, and seventh, as they occur in the major scale. A major interval becomes augmented by the sharpening of its upper, or flattening of its lower, constituent tone. A major interval becomes minor by the flattening of its upper, or sharpening of its lower, constituent tone.

Minor are the third, sixth, and seventh, as they occur in the natural minor scale. A minor interval becomes major by the sharpening of its upper, or flattening of its lower, constituent tone. A minor interval becomes diminished by the flattening of its upper, or sharpening of its lower, constituent tone.

Intervals larger than one octave can be understood in two senses. Melodically, the interval *c* to *e*¹ is a tenth. Harmonically, it is a third.

KEY SIGNATURE. The indication, by sharps or flats, of the tonal material of a composition. In classic Western music, a given key signature indicates both a major key and its relative minor key. C major and A minor contain no sharps or flats. One sharp is added for each key as one ascends in fifths (C, G, D, A, etc.); one flat, for each key as one descends in fifths (C, F, B-flat, E-flat, etc.).

MELODY. A succession of three or more tones than can be sung. This definition implies a certain magnitude; a beginning, middle, and end; and a dynamic flow of pitch relations.

METER. The order according to which time is measured.

MODE. A specific selection and arrangement of tones forming the tonal substance of a composition.

MONODY. Music for a single voice; only one note is heard at a time.

MOTION. Two voices progress in (a) direct motion if both move in the same direction; (b) oblique motion if one voice remains on the same pitch; (c) contrary motion if they move in opposite directions.

OVERTONES. The tones generated above a fundamental tone by secondary vibrations of the main wave. What sounds to the ear like one tone is actually a composite of the fundamental tone plus its overtones. Theoretically, the distribution of overtones remains constant (see Figure 1, p. 3). Practically, the specific constellation of overtones is responsible for the differences of timbre.

In the overtone series, powers of 2 indicate the relationship of octaves; powers of 3, that of fifths; powers of 5, that of major thirds.

POLYPHONY. Music for several voices in which the melodic line prevails over the harmonic element.

POLYTONALITY. Simultaneous presence of several different tonal centers.

REALIZING A BASS. Converting into chords, by playing or writing, the harmonies indicated by a figured bass line.

RHYTHM. The principle of alternating tension and relaxation, anarsis and thesis; accented and weak, or long and short, beats.

SCALE. The arrangement according to increasing or decreasing pitch within one octave of the tonal material of a mode, or system or composition. Our present major and minor scales are only two of many possibilities. The half tones in the major scale lie between the third and fourth, and seventh and eighth, steps. The other steps are whole tones. The half tones in the natural minor scale lie between the second and third, and fifth and sixth, steps.

STEP. The interval between two contiguous degrees of a scale.

SUSPENSION. A melodic device delaying the entrance of an expected tone; also, the delaying (or suspended) tone itself.

TONAL CENTER. The tone or harmony which determines the relative consonant and dissonant values of all other melodic and harmonic elements in a composition. In classical music, the tonal center is identical with the tonic.

TONALITY. The totality of the melodic and harmonic elements of a musical work as related to a common tonal center.

TONE. The building material of music. A tone possesses pitch, loudness, timbre, and duration. It is produced by a regular vibration of an elastic body. Pitch increases with the frequency, i.e.

the number of vibrations per second. Loudness increases with the amplitude, i.e., the distance of the vibrating curve from the position of rest. Timbre varies according to the constellation of actually sounding overtones. Duration is an attribute of time rather than a physical quality of the vibration itself.

TRITONE. The interval of three whole tones, a strong dissonance.